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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/914,704	05/23/2002	Alexander Dyck	1999/F-044	9977

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EXAMINER

MENON, KRISHNAN S

ART UNIT PAPER NUMBER

1723

DATE MAILED: 12/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/914,704

Applicant(s)

DYCK ET AL.

Examiner

Krishnan S Menon

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 19-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,19-22 and 24-44 is/are rejected.
- 7) ☒ Claim(s) 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner. \_\_\_\_\_  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

Claims 1,2, and 19-44 are pending in this application after the preliminary amendment.

#### ***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1,2,19-22, 24,25,27, 28 and 33- 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Ozcayir et al (US 5,618,334).

Ozcayir teaches membranes containing the repeat units (I) and (II) of claims 1 and 2 in columns 2-5, where, X can be –CO– as in claim 19, Ar1 and Ar2 can be phenylene or biphenylene as in claim 20, further comprise repeat unit (III) of claim 21, molar proportion of the repeat units (I) and (III) overlaps the range 10-50% and 90-50% respectively as in claim 22 (see col 2 line 15-25), ion exchange capacity falls in the range between 0.5 and 3.0 meq/g as in claim 24 and 37 (col 7 lines 15-30), a membrane comprising a sulfonated polymer as in claim 25 (abstract), polymer component is sulfonated (abstract) as in claim 27. Thickness within 10 and 150 microns as in claim 28 (col 7 lines 40-45)

Ar1 and Ar2 are 1,3-phenylene or 1,4-phenylene as in claims 33 and 34, further comprises the repeating formula (III) of claim 35 (see col 4 lines 35-40), formula II and III range overlaps 10-50% and 50-90% respectively as in claim 36, (col 2 lines 15-25); forms of the polymer in Li salt form (see Table) as in claim 39. Membrane comprises a polyether sulfone, and has thickness in the range 20 and 60 microns as in claim 38 (see structures in cols 2-5; col 7 lines 40-45).

2. Claim 26 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ozcayir (334).

Proton conductivity of the membrane, being same material as in the instant claim, is an inherent property of the membrane. Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection. "There is nothing inconsistent in concurrent rejections for obviousness under 35 U.S.C. 103 and for anticipation under 35 U.S.C. 102." In re Best, 562 F.2d 1252, 1255 n.4, 195 USPQ 430, 433 n.4 (CCPA 1977). This same rationale should also apply to product, apparatus, and process claims claimed in terms of function, property or characteristic. Therefore, a 35 U.S.C. 102/103 rejection is appropriate for these types of claims as well as for composition claims.)

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozcayir (334).

Claim 29-31 recites the method for making the membrane, which Ozcayir teaches in col 7 lines 37-54. Ozcayir is not specific whether the polymer is with sulfonic acid groups are alkali metal form. However, Ozcayir teaches both forms (see examples). Also the H-form or the alkali/alkali earth metal form should be equivalent. In this case, the prior art element performs the identical function specified in the claim in substantially the same way, and produces substantially the same results as the corresponding element disclosed in the specification. *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 54 USPQ2d 1308 (Fed. Cir. 2000). Aprotic solvent as in claim 29 and DMF, DMSO etc as in claim 30 (see col 7 lines 37-53 and examples). Converting from salt to acid form as in claim 31 – see col 7 lines 14-25.

4. Claims 32 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozcayir (334) in view of Bikson et al (US 5,364,454).
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Ozcayir teaches all the limitations of claim 29 as above, except the washing. Bikson teaches that the method of making membranes from aromatic sulfonated polymers is well known (see col 1 lines 35-40), and therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use such well known method to make the membrane, washing included.

5. Claims 41-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozcayir (334) in view of Kawakami et al (4,971,695).

Ozcayir teaches all the limitations of claim 25. Instant claims are combination of the membrane of claim 25 with fuel cells, capacitor and dialysis apparatus, which Ozcayir fails to teach. Kawakami teaches use of sulfonated hexafluoro polymer membranes in applications of electrochemical membrane (fuel cell, capacitors), such as electrodialysis as a dialysis membrane; and as battery separator membranes (fuel cells, capacitors), etc. (see col 2 lines 28-33). It would be obvious to one of ordinary skill in the art at the time of invention that the membrane of Ozcayir is also applicable in such applications as Kawakami teaches, since they are of similar material and of similar characteristics (see examples of Kawakami).

#### ***Allowable Subject Matter***

Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The closest prior art is Ozcayir (334) which teaches sulfonated polyimides. Claim 23 recites a polymer consisting essentially of a specific repeat unit, and such a polymer is not taught by the references, and is non-obvious to polymers disclosed in the references because of its unique structure.

#### ***Conclusion***


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 703-305-5999. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 703-308-0457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Krishnan Menon  
Patent Examiner

  
W. L. WALKER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER /00